Before the
FEDERAL COMMUNICATIONS COMISSION
Washington, DC 20554

In the Matter of:

Inquiry Regarding Carrier Current Systems,
Including Broadband Over Power Line
Systems

ET Docket 03-104

REPLY TO THE COMMENTS OF
THE ALIANCE FOR PUBLIC TECHNOLOGY
(DOCUMENT # 6514284392)

August 18, 2003

I, Ariel M. Elam, am pleased to reply to comments filed regarding Broadband over Power-line Technology submitted by the Alliance for Public Technology (APT).

While I believe that the intentions of the Commission are fully directed toward the growth of broadband services resulting in more choices to consumers, I must take exception to the beliefs that BPL is a premium opportunity to achieve these goals. I agree with APT's selfassessment that they are not in a position to comment on technical questions raised in the Notice, however, technical, engineering, and physics issues cannot be ignored or overlooked, regardless of best intentions to bring advanced services and applications to Americans. To do otherwise is simply irresponsible, and a waste of those very American's tax dollars.

I commend the APT on their efforts now embodied in Section 706 of the 1996 Act, however I will have to fundamentally disagree with the aggressiveness promoted in achieving these ends, with blatant disregard to technical issues and near certain impact to existing systems and services.

I strongly disputes the APT assertion that Broadband over Power-Line has the potential to become a strong facilities based provider in the developing broad band marketplace, and rather is poised for disruption to existing services and facilities for the following reasons:

1. Digital signals, however conveyed, are inherently difficult to restrict to their basic modulation bandwidths (in this case 2 to 80 MHz) and will cause harmful interference to services occupying the harmonic multiples of this range. We have often seen 5 MHz digital signals generate receivable energy well beyond 10 GHz via these harmonics. Low manufacturing cost targets are juxtaposed to the application of adequate filtering to control this problem.

2. Coupling of BPL signals to uncontrolled impedance unshielded lines is in effect giving them an antenna. The effectiveness of this antenna is proportional to its length in wavelengths. Most typical power lines will provide multiple wavelength efficient radiators of this energy. In fact, power lines will prove to be a lossy medium to convey the desired signal to its intended destination because of this radiation.

3. These frequencies by nature are "International" in that very low power(milliwatts) can facilitate communications worldwide. By radiating in this range the BPL providers will become the targets of worldwide interference complaints. But being a non-licensed service, it is not readily traceable,except to the nation of origin. Japan has withdrawn their interest in this technology after realizing its' potential for interference, both locally and globally.

4. This technology while functional in limited tests, in my experience,will not "scale well". That means the deleterious effects will grow exponentially with broad deployment. Large areas will in effect become more efficient phased array radiators of this noise.

5. Due to the efficiency of the power lines as antennas at these frequencies, reciprocity says they will also couple or receive existing services' RF power into the receivers of the BPL signals efficiently as well, in all likelyhood rendering them inoperative. This will cause licensed users of this spectrum to become the targets of interference complaints from unlicensed and less technically competent users. My experience has seen this escalate to life threats with firearms over mere television interference complaints against operators working within the FCC rules,and consumers violating the law with illegal cable television taps. Similar episodes are inevitable with BPL.

6. It has been my personal observation that power utilities have a very bad record at correcting interference even from corona from damaged utility hardware at 60Hz. It is logical to assume, that when this interference problem covers millions of existing services' frequencies,the FCC's challenges at enforcement will be unbelievable.

While APT encourages the Commission to take action to bolster broadband competition, I encourage the Commission to take the opportunity to employ sound engineering practices (as is currently done by the Commissionwith similar radiated and conducted succeptability measurements) for the long term good of the American people. This should include maintaining Part 15 limits at current levels or below.

I agree with APT that the Commission should regulate in a neutral manner, however, this should not preclude proper engineering assessment,consideration to shielding, and emission limits. It is my recommendation,as Amateur Extra Class Licensee first licensed in 1954, experienced radio frequency designer, and user of equipment for this spectrum, that the BPL technology is not field proven, and wholly inappropriate for the scope and breadth of application being suggested in this case.

Respectfully submitted,

Ariel M. Elam, K4AAL